CLAIMS

What is claimed is:

1. An isolated nucleotide sequence encoding at least a portion of the human alpha-7 nicotinic receptor, wherein said sequence is selected from the group consisting of SEQ ID NOS:84-103.

2. An isolated peptide sequence encoded by the isolated nucleotide sequence of Claim 1.

3. The isolated nucleotide sequence of Claim 1, wherein said nucleotide sequence further comprises 5' and 3' flanking regions.

4. The nucleotide sequence of Claim 1, wherein said nucleotide sequence further comprises intervening regions.

5. A vector comprising a nucleotide sequence, wherein the nucleotide sequence comprises the nucleotide sequence of Claim 1.

6. A host cell transformed with the vector of Claim 5.

7. The host cell of Claim 6, wherein said cell is selected from the group consisting of bacteria, yeast, amphibian, and mammalian cells.

8. A first polynucleotide sequence comprising at least fifteen nucleotides, which hybridizes under stringent conditions to at least a portion of a second polynucleotide sequence, wherein said second polynucleotide sequence is selected from the polynucleotide sequences set forth in Claim 1.

9. A method for detection of a polynucleotide encoding alpha-7 protein in a biological sample suspected of containing said polynucleotide encoding alpha-7, comprising the step of hybridizing at least a portion of a polynucleotide sequence selected from the group consisting of SEQ ID NOS:9-11, and 84-103, to nucleic acid of said biological sample to produce an hybridization complex.

10. The method of Claim 9, further comprising the step of detecting said hybridization complex, wherein the presence of said complex correlates with the presence of a polynucleotide encoding alpha-7 in said biological sample.

11. The method of Claim 10, wherein said biological sample is a sample selected from the group consisting of brain tissue and blood.

12. The method of Claim 9, wherein said biological sample is from a human.

13. The method of Claim 12, wherein said human is suspected of suffering from a condition selected from the group consisting of schizophrenia, small cell lung carcinoma, breast cancer, and nicotine-dependent illness.

14. The method of Claim 9, wherein before hybridization, said nucleic acid of said biological sample is amplified by the polymerase chain reaction.

15. A method for amplification of nucleic acid from a sample suspected of containing nucleic acid encoding alpha-7, comprising the steps of:

a) providing a test sample suspected of containing amplifiable nucleic acid encoding alpha-7;

b) isolating said amplifiable nucleic acid from said test sample;

c) combining said amplifiable nucleic acid with amplification reagents, and at least two primers selected from the group consisting of primers

having the nucleic acid sequence set forth in SEQ ID NOS:1-8, and 12-83 to form a reaction mixture; and

d) combining said reaction mixture with an amplification enzyme under conditions wherein said amplifiable nucleic acid is amplified to form amplification product.

16. The method of Claim 15, further comprising the step of detecting said amplification product.

17. The method of Claim 16, wherein said detecting is accomplished by hybridization of said amplification product with a probe having the nucleic acid sequence is selected from group of the sequences set forth in SEQ ID NO:9-11.

18. The method of Claim 15, wherein said test sample is a sample selected from the group consisting of brain tissue and blood.

19. The method of Claim 15, wherein said test sample is from a human.

20. The method of Claim 19, wherein said human is suspected of suffering from a condition selected from the group consisting of schizophrenia, small cell lung carcinoma, breast cancer, and nicotine-dependent illness.

21. A method for amplification of nucleic acid from a sample suspected of containing nucleic acid encoding alpha-7 comprising the steps of:

a) providing a test sample suspected of containing amplifiable nucleic acid encoding alpha-7;

b) isolating said amplifiable nucleic acid from said test sample;

c) combining said amplifiable nucleic acid with amplification reagents, and a first primer set comprising at least two primers selected from

the group consisting of the sequences set forth in SEQ ID NOS: 65-70, to form a first reaction mixture;

d) combining said reaction mixture with an amplification enzyme under conditions wherein said amplifiable nucleic acid is amplified to form a first amplification product;

e) combining said first reaction mixture with amplification reagents, and a second primer set comprising at least two primers selected from the group consisting of the sequences set forth in SEQ ID NOS:57-59, 61, 63, 67, and 73-75, to form a second reaction mixture;

f) combining said second reaction mixture with an amplification enzyme under conditions wherein said amplifiable nucleic acid is amplified to form a second amplification product; and

g) detecting said first or second amplification product.

22. The method of Claim 20, wherein said detecting comprises hybridizing said amplification product with a probe having a nucleic acid sequence selected from the group consisting of the nucleic acid sequence set forth in SEQ ID NOS:9-11.

23. The method of Claim 21, wherein said test sample is a sample selected from the group consisting of brain tissue and blood.

24. The method of Claim 23, wherein said test sample is from a human.

25. The method of Claim 24, wherein said human is suspected of suffering from a condition selected from the group consisting of schizophrenia, small cell lung carcinoma, breast cancer, and nicotine-dependent illness.

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